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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,772	12/29/2000	Stephen S. Selkirk	00-062-DSK	8708
7590	06/09/2004		EXAMINER	CHEN, TE Y
Wayne P. Baily Storage Technology Corporation One Storage Task Drive Louisville, CO 80028-4309			ART UNIT	PAPER NUMBER
			2171	
			DATE MAILED: 06/09/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/751,772	SELKIRK ET AL.	
	Examiner	Art Unit	
	Susan Y Chen	2171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 29 March 2004.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 12-15, 17-22, 24-28 and 30-32 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 12-15, 17-22, 24-28 and 30-32 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

Response to Amendment

This is in response to amendment filed on 03/29/2004 (paper # 12).

Claims 12-15, 17-22, 24-28 and 30-32 are pending for examination, claims 1-11, 16, 23, and 29 have been canceled; claims 12, 17-19, 24, 26, 30, and 32 have been amended.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 12-15, 17-22, 24-28 and 30-32, are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,532,527 issued to Selkirk et al. (hereinafter referred as Selkirk '527).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art

under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Claims 12 & 32 :

Selkirk '527 discloses:

- generating a hierarchical data structure/table in a primary storage of a computer data processing system [e.g., Step 514, Fig. 5; Fig. 8; col. 3, lines 40-42; col. 10, lines 35-40];
- the hierarchical data structure includes a plurality of layers arranged according to a hierarchy [e.g., col. 10, lines 38-51];
- each data entry in each layer represents a range of the virtual address [e.g., Fig. 5, 7, 9 & 10];
- each data entry is correlated to a set of data entries in the next lowest layer [e.g., col. 10, lines 52- col. 11, line 5];
- each data entry in the lowest layer corresponds to both a virtual address range and a block address corresponding the a physical data block in the at least one data storage device [e.g., col. 11, lines 6-34, Figs. 9-10];
- each data entry within the primary storage corresponds to a currently occupied virtual address range, such that none of the data entries

corresponds to only unused physical storage [see the erase gap processing, col. 12, lines 5-26];

- each physical data block in the at least one data storage device contains virtual address information that identifies at least one corresponding location in the virtual address space for that physical data block [e.g., see the Hash algorithm to map a virtual address space for a physical storage data block; [col. 11, lines 35-48]; and
- at least some of the data entries in each layer represent virtual address ranges of a homogeneous size corresponding to that layer [the load point and offset (906), Fig. 9; col. 9, lines 29-52; col. 10, lines 1-34; Fig(s). 8-10 and associated texts].

Claim 13:

Selkirk '527 further discloses swapping sub-hierarchies of data entries between the hierarchical data structures as claimed [e.g., see col. 11, lines 16 – 21, lines 28-34].

Claim 14:

Selkirk '527 further discloses at least some of the data entries in the lowest layer include a device address identifying an individual storage device in the at least one data storage device [e.g., 808, Fig. 8, col. 11, lines 22-27].

Claim 15:

Selkirk '527 further discloses the correlation schema is a hash algorithm [e.g., 902, 904, Fig. 9].

Claim 17: Selkirk '527 further discloses creating a second data structure to identify exceptional data entries in the hierarchical data structure, such that the exception data entry correspond to a virtual address size that differs from the homogeneous size [e.g., the exception flags, col. 10, lines 9-16; lines 29-34].

Claim 18: Selkirk '527 further discloses the virtual address space information identifies a plurality of corresponding locations in the virtual address space for the physical data block [e.g., the Virtual Track table 702 and the Virtual Track Number table 704, Fig. 7].

Claims 19-22 and 24-28 and 30-31: these claims recite the same features as claim 12-15, 17-18 and 32, in form of computer program product media and computer data system, hence are rejected for the same reason.

Response to Arguments

Applicant's arguments filed on 03/29/2004 have been fully considered but they are not persuasive.

In response to applicant's arguments against 35 U.S.C §102 (e) rejection, that the references on record fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., virtual address ranges of a homogeneous size) are not defined in the instant specification, therefore, it is open for any reasonable art interpretation. Therefore, the use of the Load Point & Offset unit in the map table [906, Fig. 9] and other techniques [e.g., col. 9, lines 29-52; col. 10, lines 1-3] for tracking the virtual address ranges of a dynamic snap copy data to maintain a homogeneous size storage is definite reads on the claimed features [the load point and offset (906), Fig. 9; col. 9, lines 29-52; col. 10, lines 1-34; Fig(s). 8-10 and associated texts].

Conclusion

To expedite the process of re-examination, the examiner requests that all future correspondences in regard to overcoming prior art rejections or other issues (e.g. 35 U.S.C. 112) set forth by the Examiner prior to the office action, that applicant should provide and link to the most specific page and line numbers of the disclosure where the best support is found (see 35 U.S.C. 132).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Y Chen whose telephone number is (703) 308-1155. The examiner can normally be reached on Monday - Friday from 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on (703) 308-1436. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-6296.

Susan Chen
June 4, 2004

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PRIMARY EXAMINER